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MANAGEMENT OF ARCHIVE AND LIBRARY INSTITUTIONS: EXPERT EVALUATION OF THE QUALITY OF ACTIVITIES

N. BACHYNSKA, E. TVERYTNYKOVA*, T. DROZDOVA, H. SALATA

Department of information and measuring technologies and systems, National Technical University "Kharkiv Polytechnic Institute", Kharkiv, UKRAINE

* e-mail: tveekhpi@ukr.net

ABSTRACT The use of information technologies in the practical activities of archival and library institutions is becoming more and more widespread. This actualizes the study of the issue of library and archive management and the implementation of quality management systems in the activities of libraries and archives. This problem is exacerbated by the current emergency situation in which archival and library institutions operate. Therefore, it is necessary to involve modern approaches to assessing the quality of library and archive management. The use of expert methods for evaluating multi-faceted systems has a long tradition. Expert assessment methods are used in various fields, in particular, during crisis situations of managerial and socio-economic problems, analysis and forecasting having a large number of social factors. The involvement of a number of methods of related disciplines, including interviewing, questionnaires, surveys, the Delphi method, brainstorming, conference of ideas, etc., contribute to the effective analysis of the management system of a scientific or educational institution. The implementation of the method of expert evaluations in the work of scientific institutions, in particular the archival and library direction, is especially relevant, since the problems of ensuring the quality of their activities are solved with the help of these methods. The quality of activity of the scientific and technical library and archive based on the involvement of experts from three groups was monitored. These are representatives of the teaching staff, researchers and students. The evaluation of such indicators as the process of quality information support of education and research was carried out; the process of reengineering and maximum automation; the process of providing library and archival services. As a result, the positive and weak points of the library and archive institution management were revealed. Based on the results of the analysis, the top management of archival and library institutions should set the new goals regarding the quality level of library and archival services provided, establish a strategy for increasing user satisfaction, assessing the suitability of the structure and resources for future development.

Keywords: management; quality; expert assessment; archival and library affairs; information technologies.

МЕНЕДЖМЕНТ АРХІВНИХ І БІБЛІОТЕЧНИХ УСТАНОВ: ЕКСПЕРТНЕ ОЦІНЮВАННЯ ЯКОСТІ ДІЯЛЬНОСТІ

Н. БАЧИНСЬКА, О. ТВЕРИТНИКОВА*, Т. ДРОЗДОВА, Г. САЛАТА

Кафедра інформаційно-вимірювальних технологій і систем НТУ «ХПІ», Харків, Україна, * e-mail: tveekhpi@ukr.net

АНОТАЦІЯ Застосування інформаційних технологій у практичній діяльності архівних і бібліотечних установ набуває все більшого поширення. Це актуалізує вивчення питання менеджменту бібліотечної та архівної справи та впровадження систем управління якістю у діяльність бібліотек і архіву. Підсилює цю проблему надзвичайна ситуація сьогодення, в умовах якої працюють архівні і бібліотечні установи. Тому необхідно залучати сучасні підходи оцінювання якості менеджменту бібліотечної та архівної справи. Застосування експертних методів для оцінювання різнопланових систем має давні традиції. Методи експертного оцінювання застосовують у різних галузях, зокрема під час вирішення кризових ситуацій управлінських та соціально-економічних проблем, аналізу й прогнозування з великою кількістю соціальних факторів. Залучення низки методів суміжних дисциплін, зокрема інтерв'ювання, анкетування, метод Дельфі, мозковий штурм, конференція ідей тощо, сприяють ефективному аналізу системи менеджменту наукової чи освітньої установи. Особливо актуально впровадження методу експертних оцінок в роботу наукових установ, зокрема архівного та бібліотечного спрямування, оскільки за допомогою цих методів вирішуються проблеми забезпечення якості їхньої діяльності. Проведено моніторинг якості діяльності науково-технічної бібліотеки та архіву на основі залучення експертів трьох груп. Це представники професорсько-викладацького складу, наукові співробітники і студенти. Зроблена оцінка таких показників як процес якісної інформаційної підтримки освіти та досліджень; процес реінжинірингу та максимальної автоматизації; процес надання бібліотечних та архівних послуг. У підсумку були виявлені позитивні й слабкі сторони менеджменту бібліотечної та архівної установи. За результатами аналізу, з боку вищого керівництва архівних і бібліотечних установ мають встановити нові цілі щодо рівня якості бібліотечних та архівних послуг, стратегію стосовно підвищення задоволеності користувачів, оцінювання придатності структури та ресурсів для майбутнього розвитку.

Ключеві слова: менеджмент; якість; експертне оцінювання; архівна та бібліотечна справа; інформаційні технології.

Introduction

The development of both library and archival institutions depends on a number of factors and involves

activities aimed at improving the quality of services and resources. In recent decades, the involvement of information technologies has become traditional. All this actualizes the issue of library and archive management

and the implementation of quality management systems in the activities of libraries and archives. This problem is reinforced by the current emergency situation in which archival and library institutions work today. Therefore, it is necessary to involve modern approaches to assessing the quality of library and archive management.

The use of expert methods for the evaluation (audit) of various objects and systems originates from ancient times and develops in parallel with the formation of human society. Examples of forms of implementation of expert evaluation at various stages of social development are councils of elders, military meetings, senates and boards, expert commissions, etc.

At the current stage, expert evaluation methods are used in various fields of practical and scientific activity. These methods are indispensable when solving crisis situations of management and socio-economic problems, analysis and forecasting with a large number of social factors, whenever there is a need to apply the knowledge, intuition and experience of highly qualified experts.

In recent years, methods of expert evaluations based on the use of expert information have gained particular popularity in the scientific and educational systems. They help to establish the degree of complexity and relevance of the problem, determine the main goals and criteria, identify important factors and relationships between them, and choose the best alternatives.

Most of these methods take their origin from sociological and political sciences, in particular interviews, questionnaires, surveys, economics, marketing and management, but there are also interdisciplinary ones that are widely used in psychological and pedagogical sciences (the Delphi method, brainstorming, conference of ideas). The method of expert evaluations allows analyzing the management system of a scientific and educational institution.

The implementation of the method of expert evaluations in the work of scientific institutions, in particular the archival and library direction, is especially relevant, since the problems of ensuring the quality of their activities are solved with the help of these methods.

The management of library and archival statutes is the subject of research by both domestic and foreign scientists. The publication [1] highlights the results of the monitoring of the Regional Library and Archive Institution of the West Nusa Tenggara Province based on methods of data collection, interviewing, regulatory documents, etc., aimed at improving the quality of management of institutions. The results of numerous studies based on the satisfaction of the demand of users of archival and library institutions in Turkey and Great Britain are presented in the work [2-4]. Analysis of the activity, management system, organization, structure of the library of the University of Bosnia and Herzegovina is presented in the study [5]. Based on a survey of 255 respondents (students), the author studied the level of use by library funds. The question of the formation of archival brand management as an important component of the development of archival institutions in Ukraine was raised in the research of V.

Bezdrabko [6]. The researchers were engaged in the study of archival and library institutions management principles as well as in the study of the problems of using expert assessments in the quality monitoring system for improving services and resources [7-11].

Purpose of the work

The purpose of the research is to analyze the factors that affect the quality of the activities of library and archive institutions, to determine the main indicators of expert assessments, to analyze the results of expert assessment of library and archive institutions management processes. To substantiate the importance of the use of expert evaluation for library and archival affairs management quality improvement.

Main part

Expert evaluations can be divided into the following groups: the first group is point expert evaluations, defined as one number (one-point or simply point evaluations); two numbers (colon or interval scores); three or more numbers (quartile, quantile and "probable") estimates. Point expert evaluations have found the most widespread application in forecasting tasks. However, at present, they are just as widely used in solving other problems of group expertise [12].

The second group of expert evaluations includes ranked expert evaluations. Ranked expert evaluations are evaluations of features of objects, obtained on the basis of the preference of one object over another established by the expert from the point of view of the measure of the assessed quality and expressed in the form of natural series numbers (ranks) assigned to individual objects.

The third group includes qualitative expert assessments. Expert assessments that do not contain numbers and don't represent expert curves are called qualitative. Qualitative expert evaluations can be subdivided into evaluations made according to previously compiled scales (evaluations of qualitative features), and into evaluations for which scales cannot be compiled in advance.

The task of statistical processing of individual rankings, as well as expert evaluations of other types, is to identify "heretics" and "schools" among a group of experts, to determine the indicator of generalized opinion and to characterize the agreement of evaluations based on which the generalized opinion is determined.

To determine the generalized assessment of each object, it is necessary to apply some average, but it is impossible to prove that the application of arithmetic averaging gives a better assessment than the median or mode, although each of these averages characterizes the central tendency of a group of experts [13].

The main characteristics of a group expert evaluation are: the generalized opinion of a group of experts, the degree of consensus of experts' opinions, the competence of experts.

As an indicator of the generalized expert opinion, if each of the properties (qualities) is evaluated separately, one of the measures of central tendency is most often used. Different measures of central tendency of a data set imply different definitions of "centrality". There are three measures: mode, median, and mean.

Each measure of the central tendency has characteristics that make it valuable under certain conditions.

Mode is the easiest to calculate – it can be determined by eye. Furthermore, for very large groups of data, it is a fairly stable measure of the center of the distribution. In many distributions of a significant number of measures used in pedagogy and psychology, the mode is close to two other measures – the median and the mean [14].

The median occupies an intermediate position between the mode and the visual mean, if the latter is performed manually. This measure is almost straightforward and is particularly easy in the case of ranked data. In large arrays, the data can be grouped first (making ranking much easier) and then the median can be easily found.

If the expert evaluations are presented on a nominal scale, then only the mode can be used as a measure of central tendency.

The average arithmetic value of M_j is determined for each of the qualities and can take values ranging from the minimum value in points to the maximum. The lower limit corresponds to the random case when all experts gave the minimum possible assessment of importance, and the upper limit corresponds to the case when all experts gave the maximum possible assessment of the importance of a given quality:

$$M_j = \frac{1}{m} \sum_{i=1}^{m_j} C_{ij} \quad (1)$$

where m – number of experts, $i = 1, 2, \dots, m$; n – the number of qualities offered for evaluation, $j = 1, 2, \dots, n$; m_j – the number of experts who rated the j -th quality; C_{ij} – assessment of relative importance (in points) by the i -th expert of the j -th quality; M_j – the arithmetical mean of the assessment value of the determined direction of research (in points).

One of the indicators of the generalized expert opinion is the frequency K_j' of the maximum possible ratings obtained by the j -th quality:

$$K_j' = \frac{m_j'}{m_j} \quad (2)$$

where m_j' – the maximum number of possible grades obtained by the j -th quality.

Frequency K_j' of the maximum possible grades is determined for each of the j qualities and can take values in the range from 0 to 1. The lower limit corresponds to random, when there are no maximum possible grades among the grades received by the j -th quality, and the upper limit corresponds to the case when all the grades

received j -th quality, are maximally possible. The importance of the development of the j th quality increases with change K_j' from 0 to 1.

Indicator K_j' should be considered as an additional indicator of importance M_j . K_j' characterizes the importance of the j -th quality in terms of the number of "first places" awarded to it [29].

The expert's competence is determined by the structure of the arguments that served as a basis for his answer, as well as by the degree of his familiarity with the issue under consideration.

The structure of the arguments that served as the basis for his/her assessment is taken into account by the factor of argumentation K_a . This coefficient is determined by evaluating the sources of argumentation and taking into account the degree of influence of the source and summing up the corresponding numerical values. Value:

$K_a = 1$ corresponds to a high degree of influence of the source in the expert's opinion;

$K_a = 0.8$ – average degree of influence;

$K_a = 0.5$ – low degree of influence.

The expert's degree of familiarity with the discussed problem is taken into account by the familiarity coefficient K_f , which is determined by normalizing the value of the corresponding assessment given by the expert, i.e. by multiplying it by 0.1.

The K_k competence coefficient is defined as the arithmetic mean of the coefficients of the familiarity and argumentation degrees:

$$K_k = (K_a + K_f)/2 \quad (3)$$

The coefficient of variation V_j of the estimates obtained by the j -th quality is determined as follows:

1. The dispersion of D_j estimates of data of the j -th quality is calculated as follows:

$$D_j = \frac{1}{m_j - 1} \sum_{i=1}^{m_j} (C_{ij} - M_j)^2 \quad (4)$$

2. The root mean square deviation of the estimates obtained by the j -th quality is determined as follows:

$$\sigma_j = \sqrt{D_j} \quad (5)$$

3. The grades variation coefficient obtained by the j -th quality is determined as follows:

$$V_j = \frac{\sigma_j}{M_j} \quad (6)$$

The coefficient of variation is determined for each quality and characterizes the degree of agreement between experts' opinions about the relative importance of the j -th quality. The smaller the value of V_j , the higher the degree of agreement between the experts' opinions about the relative importance of the j -th quality [14].

Results and Conclusion

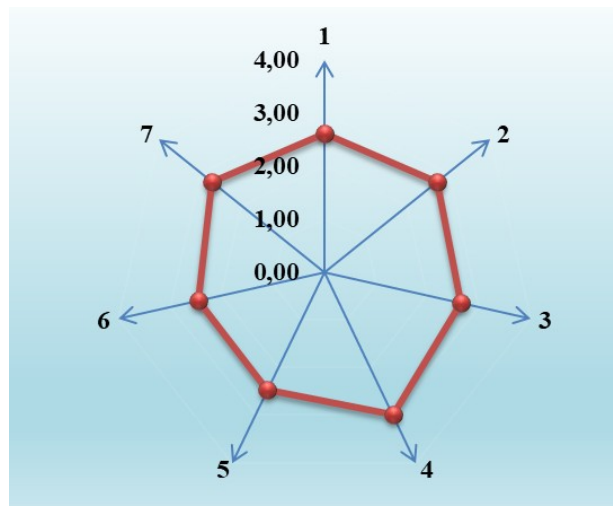
The study has monitored the quality of activity of the scientific and technical library and archive of the research institution. The following were involved in the expert activity: 1. Representatives of the teaching staff (10 people), 2. Research staff (5 people), 3. Students of the institution (10 people). It was necessary to evaluate indicators in such areas as: the process of quality information support for education and research; the process of reengineering and maximum automation; the process of providing library and archival services. The assessment was carried out on a four-point scale: bad (1), average (2), good (3), excellent (4). Assessments of scientific managers and calculation data are presented in tables and on "web" diagrams, which is a tool designed to compare the achieved level of the assessed characteristics in the library institution with the maximum possible levels (Tables 1-4 and Fig. 1-3).

Therefore, the result of the expert evaluation processing showed that the indicators according to the criterion "Process of qualitative information support of education and research" have evaluations above the average. The level of such an indicator as "Usage of digital tools" is quite high (3.00). The weak side of this criterion is "Comfortable virtual environment" (2.44). It should be noted that the highest degree of agreement of experts' opinions on the "Comfortable virtual environment" indicator demonstrates sufficient subjectivity in evaluating the outlined indicators, because the library user opinion is based on personal experience.

The component "Organization and storage of information resources" in the criterion "Process of reengineering and maximum automation" received the highest rating (3.36) and the degree of agreement of experts on this indicator is the highest. And the minimum number of points (2.12) was received by the indicator "Creation of internal digital tools".

Table 1 – The results of the processing of expert evaluations according to the criterion "The process of quality information support of education and research »

The process of quality information support for education							
Criteria	1	2	3	4	6	6	7
Arithmetical mean of the value of the estimate, M_j	2,60	2,72	2,64	3,00	2,48	2,44	2,72
Number of maximum possible grades, m_j	5,00	8,00	7,00	11,00	5,00	5,00	9,00
The frequency of maximum possible evaluations K_j	0,20	0,32	0,28	0,44	0,20	0,20	0,36
Dispersion, D_j	1,04	1,16	1,35	1,12	1,21	0,97	1,32
Root mean square deviation, σ_j	1,04	1,10	1,19	1,08	1,12	1,00	1,17
Grades variation coefficient, V_j	0,40	0,40	0,45	0,36	0,45	0,41	0,43

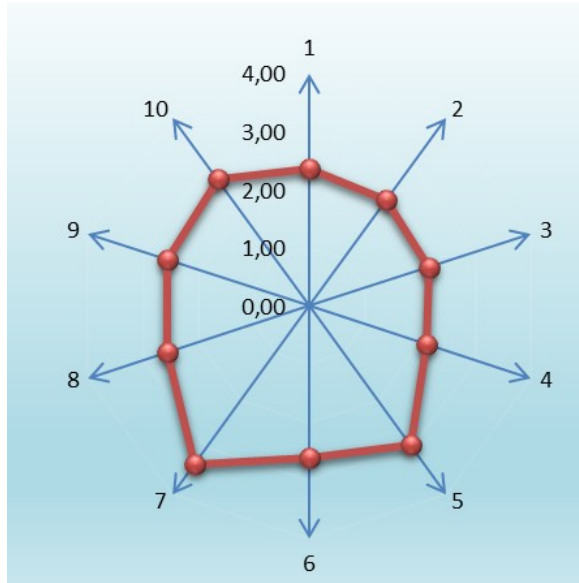


- 1 – client requests;
- 2 – information resources;
- 3 – providers of information resources;
- 4 – use of digital tools;
- 5 – experts;
- 6 – a comfortable virtual environment;
- 7 – a comfortable physical environment.

Fig. 1 – The process of quality information support for education and research

Table 2 – The results of processing expert assessments according to the criterion "Process of reengineering and maximum automation"

The process of reengineering and maximum automation										
Criteria	1	2	3	4	5	6	7	8	9	10
Arithmetical mean of the value of the estimate, M_j	2,36	2,24	2,16	2,12	2,96	2,60	3,36	2,56	2,56	2,68
Number of maximum possible grades, m_j	6,00	5,00	4,00	4,00	7,00	7,00	12	5,00	7,00	7,00
The frequency of maximum possible evaluations K_j	0,24	0,20	0,16	0,16	0,28	0,28	0,48	0,20	0,28	0,28
Dispersion, D_j	1,27	1,30	1,33	1,23	0,60	1,36	0,55	0,81	1,13	1,26
Root mean square deviation, σ_j	1,15	1,16	1,18	1,13	0,79	1,19	0,76	0,92	1,08	1,14
Grades variation coefficient V_j	0,49	0,52	0,55	0,53	0,27	0,46	0,23	0,36	0,42	0,43



- 1 – relevant operational information;
- 2 – convenient tools;
- 3 – formation of the relevant information resources collection;
- 4 – creation of internal digital tools;
- 5 – databases of educational and scientific information resources;
- 6 – provision of quick and convenient access;
- 7 – organization and storage of information resources;
- 8 – automated library and information systems;
- 9 – library and archive management services;
- 10 – search systems

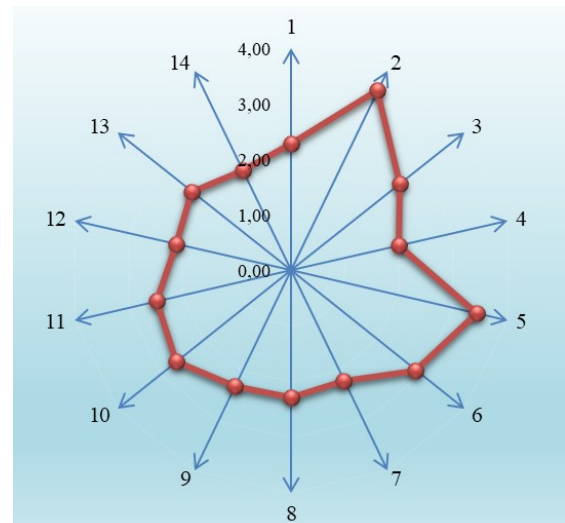
Fig. 2 – The process of reengineering and maximum automation

Table 3 – The results of processing expert evaluations according to the criterion "The process of providing library and archival services"

The process of providing library and archival services							
Criteria	1	2	3	4	5	6	7
Arithmetical mean of the value of the estimate, M_j	2,28	3,60	2,52	2,00	3,44	2,88	2,20
Number of maximum possible grades, K_j	4	14	5	0	11	9	4
The frequency of maximum possible evaluations m_j	0,16	0,56	0,20	0,00	0,44	0,36	0,16
Dispersion, D_j	1,24	0,24	1,05	0,72	0,25	0,83	1,36
Root mean square deviation, σ_j	1,14	0,50	1,05	0,87	0,51	0,93	1,19
Grades variation coefficient, V_j	0,50	0,14	0,41	0,43	0,15	0,32	0,54

Table 4 – The results of processing expert evaluations according to the criterion "The process of providing library and archival services"

The process of providing library and archival services							
Criteria	8	9	10	11	12	13	14
Arithmetical mean of the value of the estimate, M_j	2,28	2,32	2,64	2,48	2,12	2,28	2,00
Number of maximum possible grades, K_j	3	4	8	5	6	7	0
The frequency of maximum possible evaluations m_j	0,12	0,16	0,32	0,20	0,24	0,28	0,00
Dispersion D_j	1,00	1,18	1,27	1,05	1,47	1,64	0,56
Root mean square deviation, σ_j	1,02	1,11	1,15	1,05	1,24	1,31	0,76
Grades variation coefficient, V_j	0,45	0,48	0,44	0,42	0,58	0,57	0,38



- 1 – studying the needs of researchers;
- 2 – placement of materials in the repository;
- 3 – promotion of research results;
- 4 – provision of information for users;
- 5 – necessary means for issuing books
- 6 – scientometrics;
- 7 – service of librarians;
- 8 – competence of librarians;
- 9 – consulting;
- 10 – users' feedback collection;
- 11 – education (seminars, trainings);
- 12 – monitoring the operation of all services;
- 13 – study of trends in the development of scientific communications;
- 14 – providing access to electronic information resources

Fig. 3 – The process of providing library and archival services

It is positive that the indicators of the criterion "The process of providing library and archive services" such as "Placing materials in the repository" (3.60), "Necessary means for issuing books" (3.44) are at a fairly high level, but the indicators "Users' feedback collection", "Providing access to electronic information resources" received a fairly low score (2.00), which is related to the issues of bureaucracy and the unsolved intellectual property issue for the full list of information resources.

The greatest disagreement of opinions was caused by the indicator "Study of trends in the development of scientific communications", since each of the experts can interpret the indicative indicator subjectively, based on their own experience.

First, we rank all indicators according to the degree of satisfaction with quality. For this, we will assume that with the same ratings, the indicators occupy one rank, the value of which is determined in the following way: the indicators that received the highest ratings occupy the first places, and the rank is calculated as the arithmetical mean of these places.

After the calculations, the concordance coefficient equal to 0.69 was obtained, which indicates a sufficient degree of agreement of experts' opinions, and the survey data can be considered valid.

Conclusions

Therefore, according to the results of the research, both, weak and strong sides of the development of the library and archival institution were revealed. Positive interpersonal communication, work with users of library services is supported at a high level. But many indicators can be interpreted by experts quite subjectively, so they require clarification of the wording or additional discussions in a group of experts and conducting an additional survey based on the results of these discussions. It is also necessary to pay attention to indicators that are related to legal aspects, intellectual property and the relationship with other units to minimize bureaucratic disagreements.

Based on the results of the analysis, it is necessary for the top management of archival and library institutions to set new goals regarding the level of quality of library services, a strategy for increasing user satisfaction, and assessing the suitability of the structure and resources for future development.

The next step should be to consider directions for quality improvement of archival and library management based on the results of the conducted and analyzed expert assessment.

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Відомості про авторів (About authors)

Бачинська Надія Анатоліївна – кандидат педагогічних наук, професор, завідувач кафедри інформаційних технологій Київського національного університету культури і мистецтв, Київ, Україна. ORCID: 0000-0003-3912-7108. e-mail: n.bachynska17@gmail.com

Bachynska Nadiia – Ph.D. in Pedagogy, Professor, Head of the Department of Information technologies Kyiv National University of Culture and Arts, Kyiv, Ukraine. ORCID: 0000-0003-3912-7108. e-mail: n.bachynska17@gmail.com

Тверитникова Олена Євгенівна – доктор історичних наук, професор кафедри інформаційно-вимірювальних технологій та систем Національного технічного університету «Харківський політехнічний інститут», Харків, Україна. ORCID: 0000-0001-6288-7362. e-mail: tveekhpi@ukr.net.

Tverytnykova Elena – Doctor of Historical Sciences, Professor of the Department of information and measuring technologies and systems National Technical University «Kharkiv Polytechnic Institute», Kharkiv, Ukraine. ORCID: 0000-0001-6288-7362. e-mail: tveekhpi@ukr.net.

Дроздова Тетяна Василівна – кандидат технічних наук, доцент кафедри інформаційно-вимірювальних технологій та систем Національного технічного університету «Харківський політехнічний інститут», Харків, Україна. ORCID: 0000-0002-0969-2248. e-mail: drozdova.tw@gmail.com.

Drozdova Tetiana – Ph.D. in technical sciences, Associate Professor of the Department of automation and control in technical systems National Technical University «Kharkiv Polytechnic Institute», Kharkiv, Ukraine. ORCID: 0000-0002-0969-2248. e-mail: drozdova.tw@gmail.com.

Салата Галина Володимирівна – доктор історичних наук, професор кафедри інформаційних технологій Київського національного університету культури і мистецтв, Київ, Україна. ORCID: 0000-0002-2673-8463. e-mail: salaty@bigmir.net

Salata Halyna – Doctor of Historical Sciences, Professor of the Department of information technologies Kyiv National University of Culture and Arts, Kyiv, Ukraine. ORCID: 0000-0002-2673-8463. e-mail: salaty@bigmir.net.

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